

CLAIMS

What is claimed is:

1. A sleeve for receiving elongated items, said sleeve comprising:

a flexible first tubular segment having opposite ends and comprising first filamentary members interlaced together; and

a flexible second tubular segment having opposite ends and comprising second filamentary members interlaced together, said second filamentary members being different from said first, one end of said first segment being joined to one end of said second segment, said second segment being reverse folded and drawn coaxially within said first segment to form inner and outer adjacent layers surrounding a central space, a reverse fold defining one end of said sleeve.

2. A sleeve according to Claim 1, wherein said segments are integrally joined with one another.

3. A sleeve according to Claim 1, wherein said reverse fold is positioned between said segments.

4. A sleeve according to Claim 3, wherein said first and second segments are substantially equal in length, other ends of said first and second segments being positioned adjacent to one another and defining another end of said sleeve.

5. A sleeve according to Claim 1, wherein said other ends of said first and second segments are welded.

6. A sleeve according to Claim 1, further comprising a plurality of ribs formed lengthwise along said second segment, said ribs facing outwardly from said central space and engaging said first segment, said ribs separating said layers and forming a plurality of air pockets therebetween.

7. A sleeve according to Claim 6, wherein said filamentary members are interlaced by knitting, said second segment comprising a rib-knit stitch, said ribs being integrally formed in said second segment.

8. A sleeve according to Claim 1, further comprising a plurality of ribs formed lengthwise along said first segment, said ribs facing inwardly toward said central space and engaging said second segment, said ribs separating said layers and forming a plurality of air pockets therebetween.

9. A sleeve according to Claim 8, wherein said filamentary members are interlaced by knitting, said second segment comprising a rib-knit stitch, said ribs being integrally formed in said second segment.

10. A sleeve according to Claim 1, wherein said filamentary members are interlaced by knitting.

11. A sleeve according to Claim 1, further comprising a third tubular segment comprising interlaced filamentary members and having opposite ends, one of said ends of said third segment being joined to another end of said first segment, said third segment being drawn coaxially within said first segment to form other inner and outer adjacent layers

surrounding said central space, another reverse fold defining another end of said sleeve.

12. A sleeve according to Claim 11, wherein another end of said third segment is positioned proximate to another end of said second segment.

13. A sleeve according to Claim 12, wherein said second and third segments are approximately one half the length of said first segment.

14. A sleeve according to Claim 13, wherein said reverse folds are positioned between said segments.

15. A sleeve according to Claim 1, further comprising a third tubular segment comprising interlaced filamentary members and having opposite ends, one of said ends of said third segment being joined to another end of said first segment, said third segment being drawn coaxially over said first segment to form another outer layer surrounding said inner and outer adjacent layers, another reverse fold defining another end of said sleeve.

16. A sleeve according to Claim 15, wherein said reverse folds are positioned between said segments.

17. A sleeve according to Claim 16, wherein said first, second and third segments are approximately equal in length.

18. A sleeve according to Claim 1, wherein said second filamentary members are heat resistant mineral fibers.

19. A sleeve according to Claim 18, wherein said mineral fibers are selected from the group comprising glass, quartz, silica and ceramic fibers.

20. A sleeve according to Claim 18, wherein said first filamentary members are selected from the group consisting of DREF yarns and oxidized polyacrylonitrile fibers.

21. A sleeve according to Claim 20, wherein said DREF yarns comprise a core of glass surrounded by para-aramid fibers.

22. A sleeve according to Claim 1, wherein said first and second segments are knitted, said first segment having a knit density different from said second segment.

23. A sleeve according to Claim 22, wherein said first segment is knitted with a knit density higher than said second segment to provide abrasion resistance to said outer layer.

24. A sleeve for receiving elongated items, said sleeve comprising:

a flexible first tubular segment having opposite ends and comprised of filamentary members interlaced together; and

a flexible second tubular segment having opposite ends and comprised of filamentary members interlaced together, one end of said first segment being joined to one end of said second segment, said second segment being drawn coaxially within said first segment to form inner and outer adjacent layers

surrounding a central space, a reverse fold being formed and defining one end of said sleeve.

25. A sleeve according to Claim 24, wherein said first segment is comprised of first filamentary members and said second segment is comprised of second filamentary members different from said first filamentary members.

26. A sleeve according to Claim 24, wherein said first and second segments are substantially equal in length, other ends of said first and second segments being positioned adjacent to one another and defining another end of said sleeve.

27. A sleeve according to Claim 24, further comprising a plurality of ribs formed lengthwise along said second segment, said ribs facing outwardly from said central space and engaging said first segment, said ribs separating said layers and forming a plurality of air pockets therebetween.

28. A sleeve according to Claim 27, wherein said filamentary members are interlaced by knitting, said second segment comprising a rib-knit stitch, said ribs being integrally formed in said second segment.

29. A sleeve according to Claim 24, further comprising a plurality of ribs formed lengthwise along said first segment, said ribs facing inwardly toward said central space and engaging said second segment, said ribs separating said layers and forming a plurality of air pockets therebetween.

30. A sleeve according to Claim 29, wherein said filamentary members are interlaced by knitting, said second segment comprising a rib-knit stitch, said ribs being integrally formed in said second segment.

31. A sleeve according to Claim 24, further comprising a third tubular segment comprising interlaced filamentary members and having opposite ends, one of said ends of said third segment being joined to another end of said first segment, said third segment being drawn coaxially within said first segment to form other inner and outer adjacent layers surrounding said central space, another reverse fold being formed and defining another end of said sleeve.

32. A sleeve according to Claim 24, wherein said filamentary members comprising said second and said third segments are comprised of different material from said filamentary members comprising said first segment.

33. A sleeve according to Claim 32, wherein said second and said third segments are comprised of the same material.

34. A sleeve according to Claim 24, further comprising a third tubular segment comprising interlaced filamentary members and having opposite ends, one of said ends of said third segment being joined to another end of said first segment, said third segment being drawn coaxially over said first segment to form another outer layer surrounding said inner and outer adjacent layers, another reverse fold being formed and defining another end of said sleeve.

35. A sleeve for receiving elongated items, said sleeve comprising:

an elongated, flexible, continuous tube comprising a plurality of base filamentary members interlaced together;

a first portion of said tube having a first plurality of filamentary members interlaced with said base filamentary members;

a second portion of said tube having a second plurality of filamentary members interlaced with said base filamentary members; and

said tube being reverse folded with said first portion of said tube being positioned within said second portion of said tube.

36. A sleeve according to Claim 35, wherein said first portion is positioned in spaced relation to said second portion along said tube.

37. A sleeve according to Claim 36, wherein said reverse fold is positioned between said first and said second portions.

38. A sleeve according to Claim 35, further comprising a third portion of said tube having a third plurality of filamentary members interlaced with said base filamentary members, said second portion being positioned between said first and said third portions, said tube being again reverse folded with said second portion of said tube being positioned within said third portion of said tube.

39. A sleeve according to Claim 38, wherein said third portion is positioned in spaced relation to said second portion along said tube.

40. A sleeve according to Claim 39, wherein said reverse fold is positioned between said second and said third portions.

41. A sleeve according to Claim 35, wherein said base filamentary members comprise flexible, resilient metal wire.

42. A sleeve according to Claim 35, wherein said first filamentary members comprise temperature resistant material selected from the group consisting of silica, glass and quartz.

43. A sleeve according to Claim 38, wherein said filamentary members are interlaced by knitting.

44. A sleeve for receiving elongated items, said sleeve comprising an elongate continuous tube subdivided into a plurality of tubular segments integrally joined end to end to one another, one of said tubular segments being comprised of interlaced first filamentary members, another of said tubular segments being comprised of interlaced second filamentary members, said one tubular segment being drawn coaxially within said other tubular segment thereby forming multiple layers adjacent one another surrounding a central space for receiving said items.

45. A sleeve according to Claim 44, wherein said first filamentary members are comprised of a first

material and said second filamentary members are comprised of a second material different from said first material.

46. A sleeve according to Claim 44, wherein said first filamentary members are comprised of a first material having a first set of properties and said second filamentary members are comprised of a second material having properties different from the properties of said first material.

47. A sleeve according to Claim 45, wherein said first and second filamentary members are interlaced by knitting.

48. A sleeve according to Claim 47, wherein said first filamentary members are knitted using a first knit parameter and said second filamentary members are knitted using a second knit parameter different from said first knit parameter.

49. A sleeve according to Claim 48, wherein said first and second knit parameters are knit stitch density.

50. A method of forming a sleeve for receiving elongated items, the method comprising the steps of:
 selecting first filamentary members;
 selecting a first technique for interlacing said first filamentary members;
 selecting first parameters related to said first technique for interlacing said first filamentary members;

interlacing said first filamentary members using said selected first technique and first parameters to form a first flexible tubular segment having oppositely disposed ends;

selecting second filamentary members;

selecting a second technique for interlacing said second filamentary members;

selecting second parameters related to said second technique for interlacing said first filamentary members;

interlacing said second filamentary members using said selected second technique and second parameters to form a second flexible tubular segment, said second filamentary members being continuously interlaced with said first filamentary members to form said second flexible tubular segment continuously from one end of said first flexible tubular segment; and

drawing said second tubular segment coaxially within said first tubular segment.

51. A method according to Claim 50, wherein said second filamentary members selected are different from said first filamentary members.

52. A method according to Claim 50, wherein said first and second techniques selected for interlacing comprises knitting.

53. A method according to Claim 52, wherein one of said first and said second techniques for interlacing comprises a rib-knit stitch.

54. A method according to Claim 53 wherein one of said first and second parameters comprises knit stitch density.